Roller Coaster - Conservation of Energy

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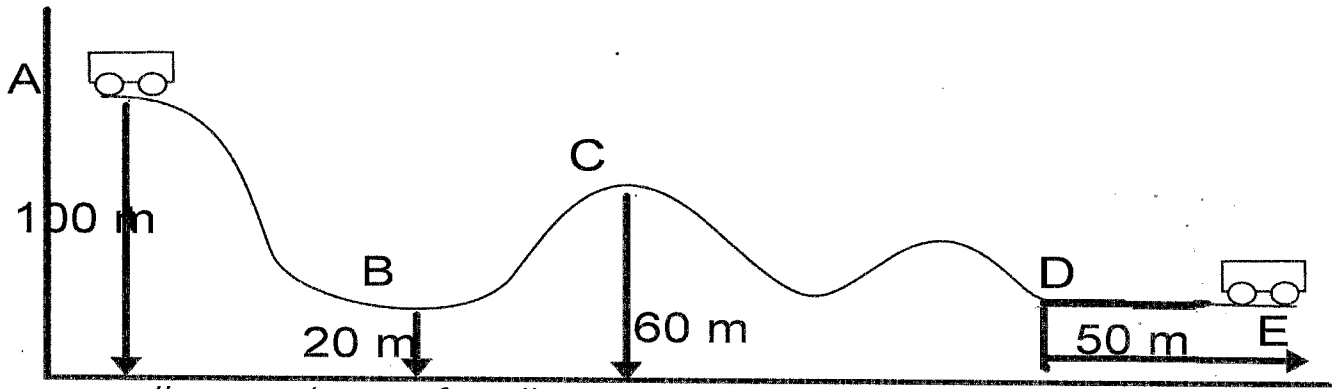

1) A person walks up to the top of a roller coaster that is 100 m high (pt. A). The mass of this person and cart is 250 kg. Upon her descent she gains speed as she falls 80 m,

a) What is the sum of her energy (energy constant) at point A? 250 KJ

b) What is her potential energy at point A? at point B? 250 KJ & 50 KJ

c) What is her kinetic energy at point A and B? 0 J & 200 KJ

d) What is the sum of her energy (energy constant) at point B? 250 KJ

e) What is her speed at point d if the distance above the ground is 40 meters?

f) What is her potential energy at point D?

g) What is her kinetic energy at point D?

h) If the distance from D to E is 50 meters, what braking force must be applied in order to stop the rider?

2) Fluffy (m= 2 kg) is looking out a window that is 10 meters off the ground. Duke, the family dog, barks at Fluffy. which (unfortunately) causes Fluffy to fall out of the window. Please complete the chart provided.

	AT 10 M	AT 7.5 M	AT 5.0 M	AT 2.5 M	NEAR GROUND
K.E. (J)					
P.E.(J)					

3) A person throws a 5 kg ball up into the air. If the person watches the ball rise to a distance of 10 meters, a) what is the kinetic energy at the highest point? b) What is the potential energy at the highest point? c) What is the speed of the ball just before it hits the ground? d) What was the speed of the ball at the 5-meter point?